

We Claim:

1. A process for preparing a powdery impact modifier, comprising the steps of:

(I) providing a polymer particle dispersion, said dispersion comprising:

5 (a) a first population of polymer particles, and

(b) a second population of polymer particles,

wherein the mean particle diameter of the first population of polymer particles is at least 50 percent larger than the mean

10 particle diameter of the second population of particles, and wherein the total rubbery weight fraction of the first and second populations of polymer particles is greater than 90 weight percent,

and

(II) spray-drying the polymer particle dispersion.

15 2. A process for preparing a powdery impact modifier as recited in claim 1, wherein the first population of polymer particles has a mean particle diameter in the range of from 10 nm to 5,000 nm.

20 3. A process for preparing a powdery impact modifier as recited in claim 2, wherein the first population of polymer particles has a mean particle diameter in the range of from 100 nm to 1,000 nm.

25 4. A process for preparing a powdery impact modifier as recited in claim 1 wherein the mean particle diameter of the (a) first population of polymer particles is at least 100 percent larger than the mean particle diameter of the (b) second population of particles.

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5. A process for preparing a powdery impact modifier as recited in claim 1, wherein the polymer particle dispersion is spray dried in step [II] with a flow aid.

5 6. A process for preparing a powdery impact modifier as recited in claim 5 wherein the amount of flow aid is more than 1.5 weight percent based on total weight of the powdery impact modifier.

10 7. A process for preparing a powdery impact modifier as recited in claim 6, wherein the total rubbery weight fraction of the first and second populations of polymer particles is less than 100 weight percent.

15 8. A process for preparing a powdery impact modifier as recited in claim 1, wherein the total polymer particles are present in an amount of more than 50 weight percent, said weight percentage being based on the total weight of the polymer particle dispersion.

20 9. A process for preparing a powdery impact modifier as recited in claim 8, wherein the second population of polymer particles are provided by an emulsion polymerization process in which the second population of polymer particles is created in the presence of the first population of polymer particles.

10. A process for preparing a powdery impact modifier as recited in claim 1, wherein the viscosity of the particle dispersion is less than 2000 centipoise.

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